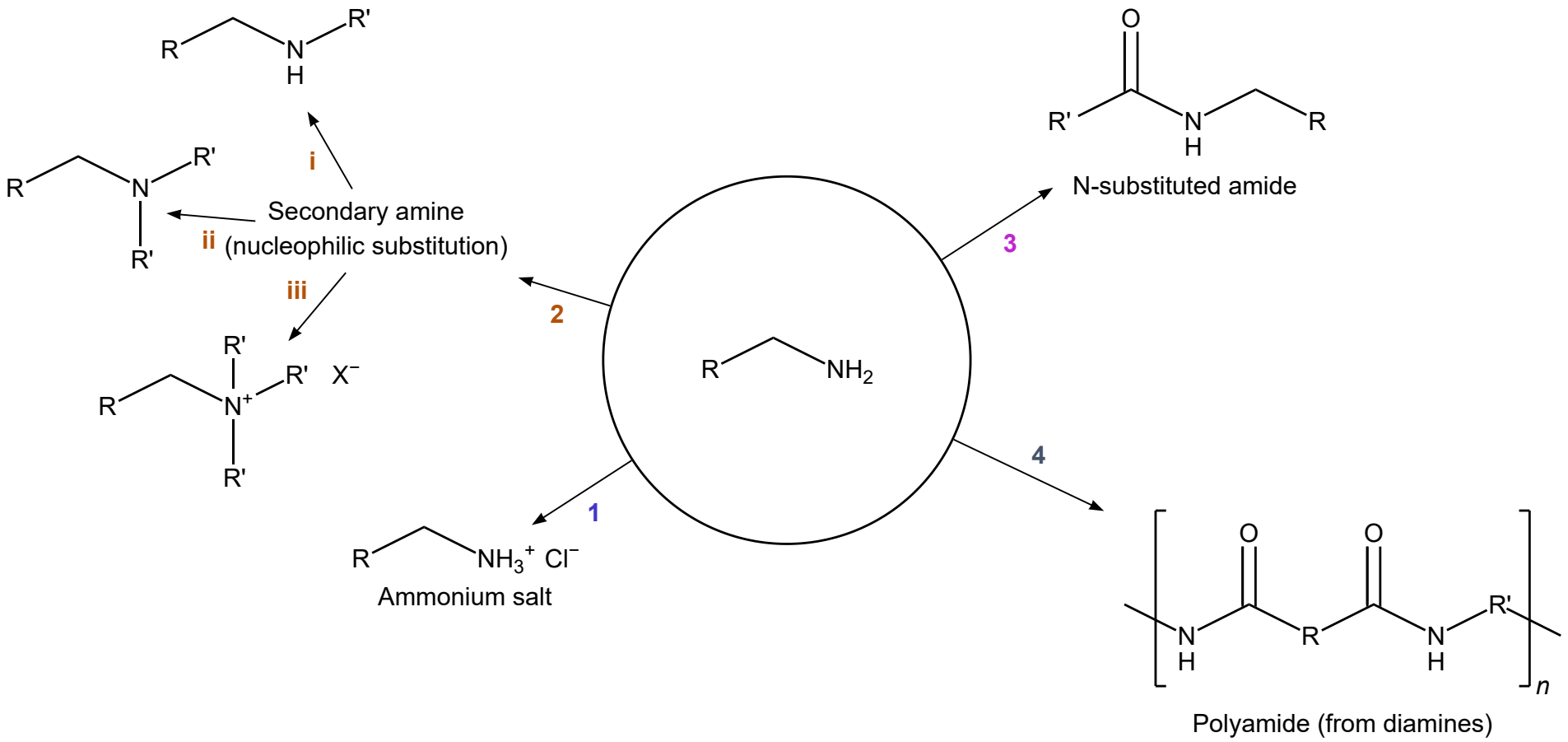
Amines Map

AQA A Level Chemistry · 3.3.11 Amines



1 acid-base: HCl(aq), room temperature (amines are weak bases)

2 substitution: halogenoalkane, R'X, heat in ethanol
i R'X → secondary amine
ii more R'X → tertiary amine
iii excess R'X (cationic surfactants) → quaternary ammonium salt

3 addition-elimination: acyl chloride or acid anhydride, room temperature
i acyl chloride, R'COCl, room temperature (+ HCl)
ii acid anhydride, $(R'CO)_2O$, room temperature (+ R'COOH)

4 polymerisation (condensation): dicarboxylic acid (e.g. nylon 6,6)

Base strength: primary aliphatic amines > ammonia > primary aromatic amines (lone pair availability on N).
Made from halogenoalkanes + excess NH_3, nitriles ($LiAlH_4$ in dry ether, then water; or H_2/Ni, heat and pressure), or nitrobenzene (Sn + conc. HCl) for aromatic amines (dyes).

acid-base substitution addition-elimination polymerisation

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